



## Complete Summary

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### GUIDELINE TITLE

Otitis media.

### BIBLIOGRAPHIC SOURCE(S)

University of Michigan Health System. Otitis media. Ann Arbor (MI): University of Michigan Health System; 2002 May. 12 p. [7 references]

## COMPLETE SUMMARY CONTENT

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## SCOPE

### DISEASE/CONDITION(S)

Otitis media, including:

- Acute otitis media (AOM)
- Otitis media with effusion (OME)

### GUIDELINE CATEGORY

Diagnosis

Management

Prevention

Treatment

### CLINICAL SPECIALTY

Family Practice

Internal Medicine

Otolaryngology

Pediatrics

## INTENDED USERS

Advanced Practice Nurses  
Nurses  
Pharmacists  
Physician Assistants  
Physicians

## GUIDELINE OBJECTIVE(S)

- To limit acute symptoms and suppurative complications caused by otitis media
- To decrease the incidence of hearing loss and its adverse effects on the development of speech and language
- To limit the development of antibiotic-resistant bacteria

## TARGET POPULATION

Pediatric patients greater than two months old and adults with suspected or confirmed otitis media (acute otitis media or otitis media with effusion)

## INTERVENTIONS AND PRACTICES CONSIDERED

### Diagnostic Techniques

1. Otoscopy exam
2. Pneumatic otoscopy exam
3. Adjunctive techniques
  - Tympanometry
  - Acoustic reflectometry
  - Tympanocentesis (emergent)

### Antibiotic Therapy

1. First-line: amoxicillin (Amoxil, Trimox)
2. Second-line: high dose amoxicillin/clavulanate (Augmentin ES) (Note: cefuroxime axetil [Ceftin], cefpodoxime proxetil [Vantin], and cefdinir [Omnicef] are considered as alternative second-line antibiotics.)
3. Third-line: ceftriaxone (Rocephin)
4. Trimethoprim/sulfamethoxazole (Bactrim, Septra), azithromycin (Zithromax), or cefprozil (Cefzil) as first-line therapy for penicillin-allergic patients
5. Otic ofloxacin or ciprofloxacin for purulent otorrhea
6. Deferral of antibiotic therapy (watchful waiting) for asymptomatic or older patients with mild symptoms

### Management of Recurrent Acute Otitis Media (AOM)

1. Tympanostomy tube placement
2. Prevention measures
  - Appropriate vaccination (influenza; pneumococcal conjugate)
  - Avoidance of environmental exposure (smoke; daycare)

- Recurrent otitis:
  - Discontinue pacifier use
  - Consider xylitol syrup or xylitol-containing chewing gum

### Subspecialty Referrals

1. Physician consultation (otolaryngology, allergy, infectious disease)
2. Audiologic evaluation

### Management of Special Circumstances

1. Management of special populations (infants 0-8 weeks old, children with chronic illnesses, otitis media in adults)
2. Tympanostomy tube management, follow-up and care or otorrhea
3. Cerumen removal

### Patient Education

Acetaminophen or Ibuprofen for Pain Control

### MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic tests
- Degree of symptomatic improvement
- Bacteriologic and clinical response rates to treatment
- Rates of antibiotic resistance
- Complication rates (e.g., hearing loss, speech language delays)
- Medication and treatment side effects

## METHODOLOGY

### METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The literature search for this project was conducted in two phases. The team began with the results of the literature searches performed for Evidence-Based Otitis Media (Rosenfeld and Bluestone, 1999) and for Management of Acute Otitis Media: Evidence Report/Technology Assessment Number 15 (Agency for Healthcare Quality and Research, 2000).

To supplement these searches with more recent findings, the team then conducted a search of literature published on Medline prospectively using the major keywords of: since 1/1/98, human, English language, clinical trials, and guidelines. Terms used for specific topic searches within the major key words included: acute otitis media, otitis media with effusion, recurrent otitis media, etiology and natural history, diagnosis (signs and symptoms, hearing loss, otoscopy, pneumatic otoscopy, tympanometry, tympanocentesis, audiogram),

treatment (antibiotic therapy, adjunctive therapy, myringotomy, laser tympanostomy), cerumen impaction, otorrhea.

Detailed search terms and strategy available upon request from the guideline developer. The search was conducted in components each keyed to a specific causal link in a formal problem structure (available upon request from the guideline developer). The search was supplemented with very recent information available to expert members of the panel, including abstracts from recent meetings and results of clinical trials. Negative trials were specifically sought. The search was a single cycle.

#### NUMBER OF SOURCE DOCUMENTS

Not stated

#### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

#### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

- A. Randomized controlled trials
- B. Controlled trials, no randomization
- C. Observational trials
- D. Opinion of expert panel

#### METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

#### DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

#### METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

#### RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

#### COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

## METHOD OF GUIDELINE VALIDATION

Peer Review

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guideline was reviewed at clinical conferences of the University of Michigan Health System (UMHS) family medicine, general medicine, pediatrics, otolaryngology, and by the Guidelines Workgroup (community and UMHS physicians) of MCARE (a managed care organization).

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

Note from the National Guideline Clearinghouse (NGC): The following key points summarize the content of the guideline. Refer to the full text of the original guideline document for additional information, including detailed information on dosing, possible side effects, and cost of medications; risk factors; subspecialty referrals; information patients need to know. Definitions for the levels of evidence (A, B, C, D) are repeated at the end of the Major Recommendations field.

#### Diagnosis

- Distinguish between acute otitis media (AOM) and otitis media with effusion (OME) in making therapeutic decisions. (Refer to Table 1 in original guideline document for details.)
- The presence of middle ear effusion should be determined by the combined use of otoscopy, pneumatic otoscopy, and tympanometry when necessary [D].

#### Antibiotic Therapy of Otitis Media

- For isolated symptomatic episodes of AOM, the antibiotic of choice is amoxicillin (at a dose of 60 to 90 mg/kg/day, divided dosing twice a day [div b.i.d.] for 5 to 10 days). Treat AOM that is clinically unresponsive to amoxicillin after 72 hours of therapy with high-dose amoxicillin/clavulanate [C]. Patients with persistent symptoms on high-dose amoxicillin/clavulanate should receive 1 to 3 doses of intramuscular (IM) ceftriaxone [C].
- Antibiotic therapy can be deferred for many asymptomatic patients, and for most cases of OME [D].
- The use of macrolides for AOM should be avoided [A].
- Avoid multiple courses of empiric, broad-spectrum antibiotics [D].
- Routine prophylactic antibiotic therapy is not recommended for recurrent AOM.

#### Prevention of AOM and OME

- Offer annual influenza vaccination to all children with a history of recurrent AOM [A].

- Ensure that all infants receive the recommended pneumococcal conjugate vaccine [A].

Notice from the National Guideline Clearinghouse (NGC) and the University of Michigan Health System (UMHS): On March 2, 2004, the Centers for Disease Control and Prevention (CDC), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP), issued recommendations to suspend routine use of both the third and fourth doses of pneumococcal conjugate vaccine (PCV7; Prevnar®). Children at increased risk of severe disease should continue to receive the full, routine, four-dose series. The recommendations were issued in response to a low vaccine supply. For more information, refer to the [CDC Web site](#).

- Avoid exposure to environmental smoke and group daycare (when feasible) for children with recurrent AOM or OME [C].
- Discontinue pacifier use in children with recurrent AOM and OME. Consider xylitol syrup or xylitol-containing chewing gum for children with recurrent AOM, depending on age [A].

#### Definitions:

#### Levels of Evidence:

Levels of evidence reflect the best available literature in support of an intervention or test.

- A. Randomized controlled trials
- B. Controlled trials, no randomization
- C. Observational trials
- D. Opinion of expert panel

#### CLINICAL ALGORITHM(S)

None provided

### EVIDENCE SUPPORTING THE RECOMMENDATIONS

#### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for the most significant recommendations (see Major Recommendations).

Conclusions were based on prospective randomized clinical trials if available, to the exclusion of other data; if randomized controlled trials were not available, observational studies were admitted to consideration. If no such data were available for a given link in the problem formulation, expert opinion was used to estimate effect size.

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

- Appropriate use of diagnostic techniques and management options for children and adults with otitis media
- Improved control of acute symptoms and suppurative complications of otitis media
- Decreased incidence of hearing loss and resulting speech and language delays
- Decreased development of antibiotic resistance

### POTENTIAL HARMS

#### Diagnostic Procedures

Tympanocentesis is a painful procedure, and, like any invasive technique, presents a risk for complications.

#### General Antibiotic Therapy

- Side effects are primarily gastrointestinal (5% to 20%) and cutaneous (allergic and diaper rash) (3% to 10%).
- Can mask serious infectious disease complications requiring specific therapy (partially treated meningitis; recurrent urinary tract infections).
- The increasing prevalence of antibiotic-resistant bacteria is an ever-present concern.

#### Trimethoprim/Sulfamethoxazole

Can be associated with aplastic anemia and Stevens-Johnson Syndrome.

#### Xylitol-Containing Chewing Gum

Risk of choking, especially in younger children.

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

These guidelines should not be construed as including all proper methods of care or excluding other acceptable methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding any specific clinical procedure or treatment must be made by the physician in light of the circumstances presented by the patient.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better  
Staying Healthy

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

University of Michigan Health System. Otitis media. Ann Arbor (MI): University of Michigan Health System; 2002 May. 12 p. [7 references]

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

1997 Nov (revised 2002 May)

### GUIDELINE DEVELOPER(S)

University of Michigan Health System - Academic Institution

### SOURCE(S) OF FUNDING

University of Michigan Health System

### GUIDELINE COMMITTEE

Otitis Media Guideline Team

### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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Guidelines Oversight Team: Connie Standiford, MD; Lee Green, MD, MPH; Van Harrison, PhD

#### FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The University of Michigan Health System endorses the Guidelines of the Association of American Medical Colleges and the Standards of the Accreditation Council for Continuing Medical Education that the individuals who present educational activities disclose significant relationships with commercial companies whose products or services are discussed. Disclosure of a relationship is not intended to suggest bias in the information presented, but is made to provide readers with information that might be of potential importance to their evaluation of the information.

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#### GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: University of Michigan Health System. Otitis media. Ann Arbor (MI): University of Michigan Health System; 1997 Nov. 12 p.

#### GUIDELINE AVAILABILITY

Electronic copies: Available for download (in Portable Document Format [PDF]) from the [University of Michigan Health System Web site](#).

#### AVAILABILITY OF COMPANION DOCUMENTS

None available

#### PATIENT RESOURCES

None available

## NGC STATUS

This NGC summary was completed by ECRI on January 7, 2003. The information was verified by the guideline developer on February 4, 2003.

## COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is copyrighted by the University of Michigan Health System (UMHS).

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